



Ethical Hacking and Countermeasures

Version 6



Module LIV

Proxy Server Technologies

Why Should You Use Anonymous Proxy Servers?

By Andrew Braithwaite

January 28, 2008

Any web resource you access can gather personal information about you through your unique IP address your ID in the Internet. They can monitor your reading interests, spy upon you and, according to some policies of the Internet resources, deny accessing any information you might need. You might become a target for many marketers and advertising agencies who, having information about your interests and knowing your IP address as well as your e-mail, will be able to send you regularly their spam and junk e-mails.

A web site can automatically exploit security holes in your system using not-very-complex, ready-made, free hacking programs. Some of such programs may just hang your machine, making you reboot it, but other, more powerful ones, can get access to the content of your hard drive or RAM. Everything a web site may need for that is only your IP address and some information about your operating system.

Many website owners ban IP's from forums, sites etc. The result being total loss of access to the site. For your own piece of mind wouldn't you like to totally stop 'big brother' from watching you? With [Hide The IP](#) you can. It's a piece of software that masks your real IP and tricks sites with another one. You can even set it

Andrew Braithwaite

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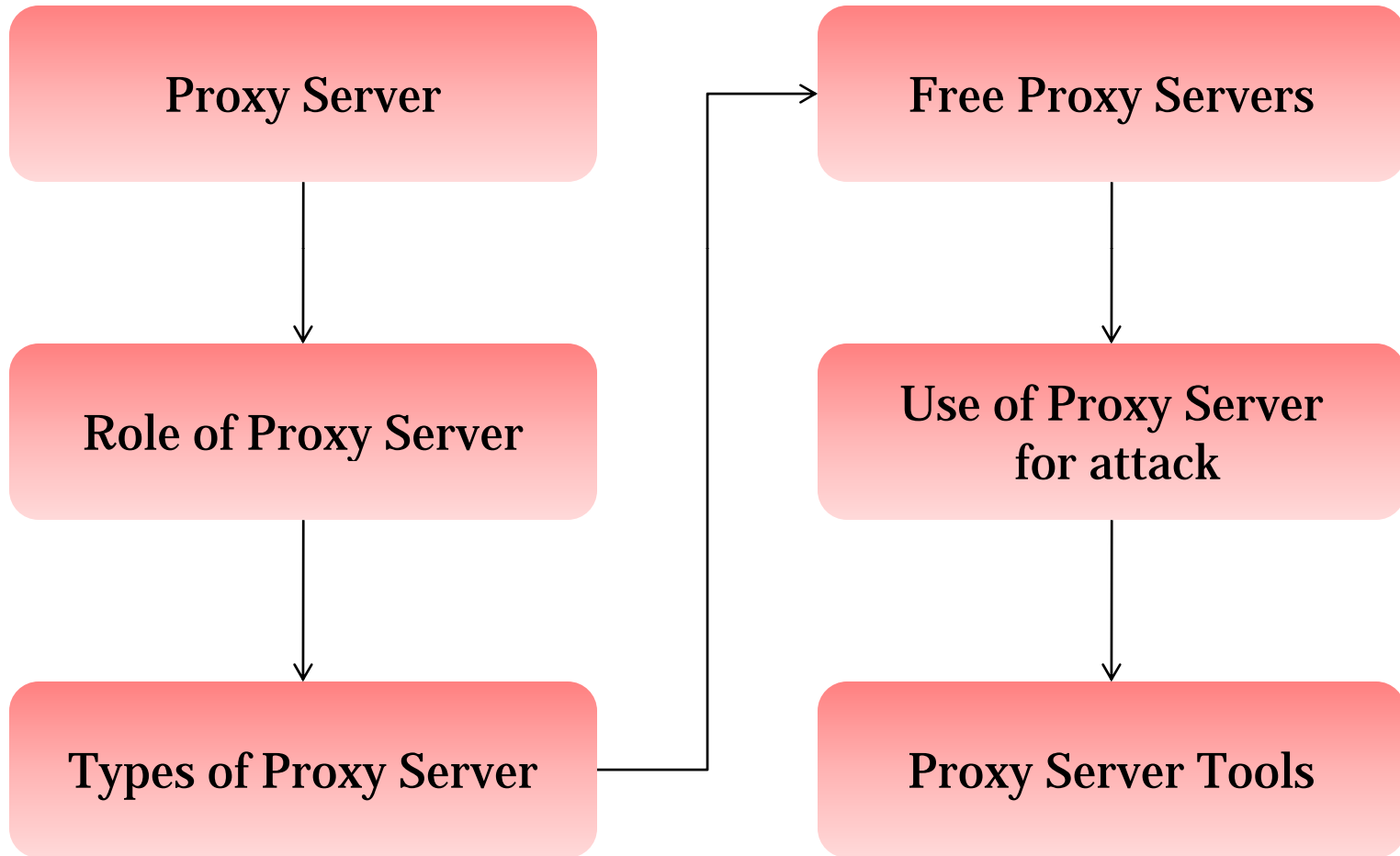
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This module will familiarize you with:

- Proxy server
- Role of proxy server
- Types of proxy server
- Free proxy servers
- Use of proxy server for attack
- Proxy server tools



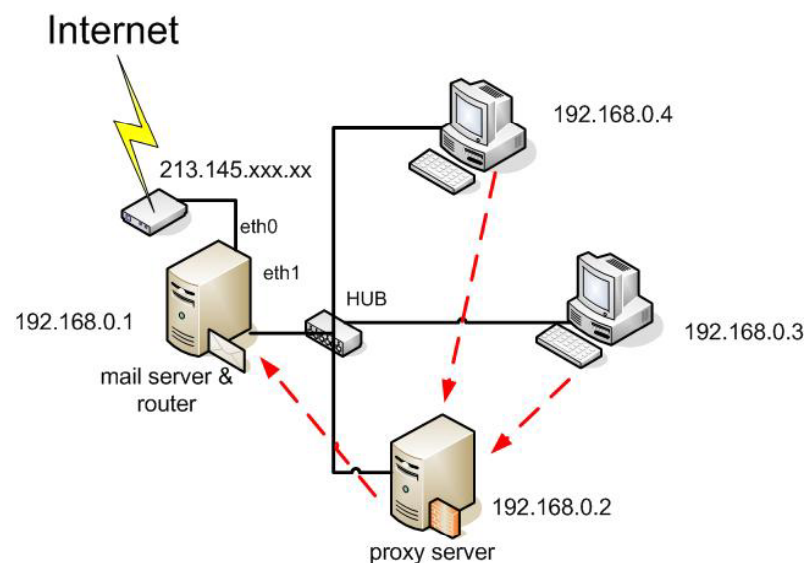
Introduction: Proxy Server

Proxy servers is a server, which acts as an intermediary between internal users and external host

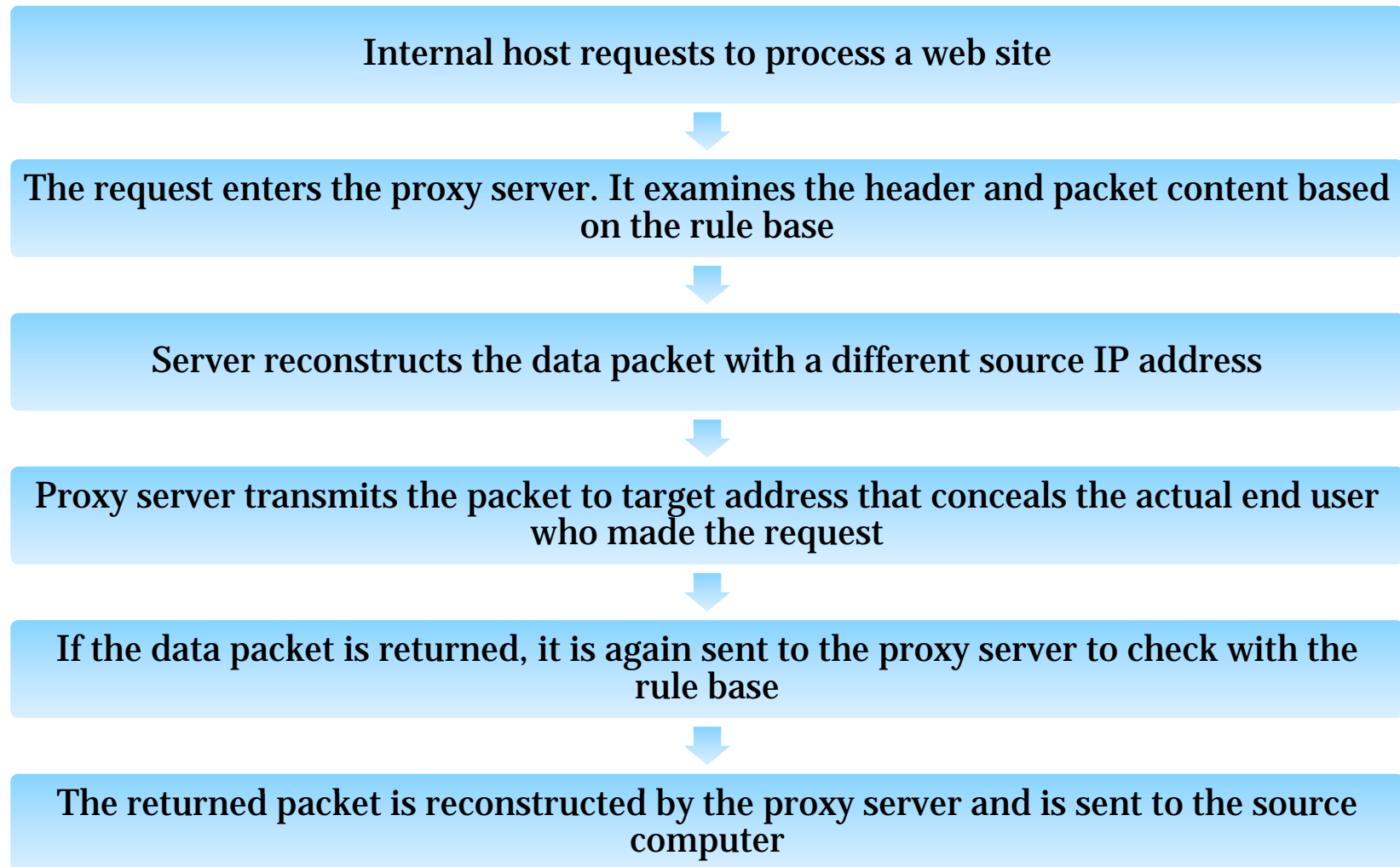
Proxy server protects and hides the computer from the outside network

It concentrates on the port that monitors the incoming and outgoing traffic of each port

Proxy server can also be used for the filtering of the request



Working of Proxy Server



Types of Proxy Server

Caching Proxy Server

- Caching is servicing the request of clients with the help of saved contents from previous request, without contacting specified server



Web Proxy

- Proxy targeted to the World Wide Web is called Web Proxy
- Web proxy serve as web cache



Anonymizing Proxy Server

- Anonymizing Proxy Server tries to anonymize web surfing



Types of Proxy Server (cont'd)



Hostile Proxy

- It is used to eavesdrop upon the dataflow between the client machine and the web



Intercepting Proxy server

- It combines proxy server with a gateway
- Commonly used in businesses to prevent avoidance of acceptable use policy and ease of administration



Forced Proxy

- Combination of Intercepting and non-intercepting policies

Types of Proxy Server (cont'd)

Open proxy Server

- It is a proxy which can be accessible by any Internet user

Split Proxy Server

- A split proxy is a proxy implemented as two programs installed on two different computers

Reverse Proxy Server

- It is a proxy server that is installed in the neighborhood of one or more web servers
- It validates and processes a transaction in such a way that actual parties do not communicate directly



Types of Proxy Server (cont'd)



Circumventor

- A circumventor is a method of defeating blocking policies which are implemented using proxy servers
- Most circumventors are also proxy servers



Transparent proxy

- It is a proxy that does not modify the request or response beyond what is required for proxy authentication and identification
- It works on the port 80



Non Transparent Proxy

- It is a proxy that modifies the request or response in order to provide some added services to the user agent
- Web requests are directly sent to the proxy regardless of the server from where it originated

The socks is an IETF (Internet Engineering Task Force) standard

It is like a proxy system which supports the proxy aware applications

The SOCKS package includes or contains the following components:

- A SOCK server for the specified operating system
- A client program such as FTP, telnet, or the Internet browser
- A client library for the SOCKS

The socks proxy server doesn't allow the external network components to collect the information of the client which had generated the request



Free Proxy Servers

Attacks using thousands of proxy servers around the world are difficult to trace

Thousands of free proxy servers are available on the Internet

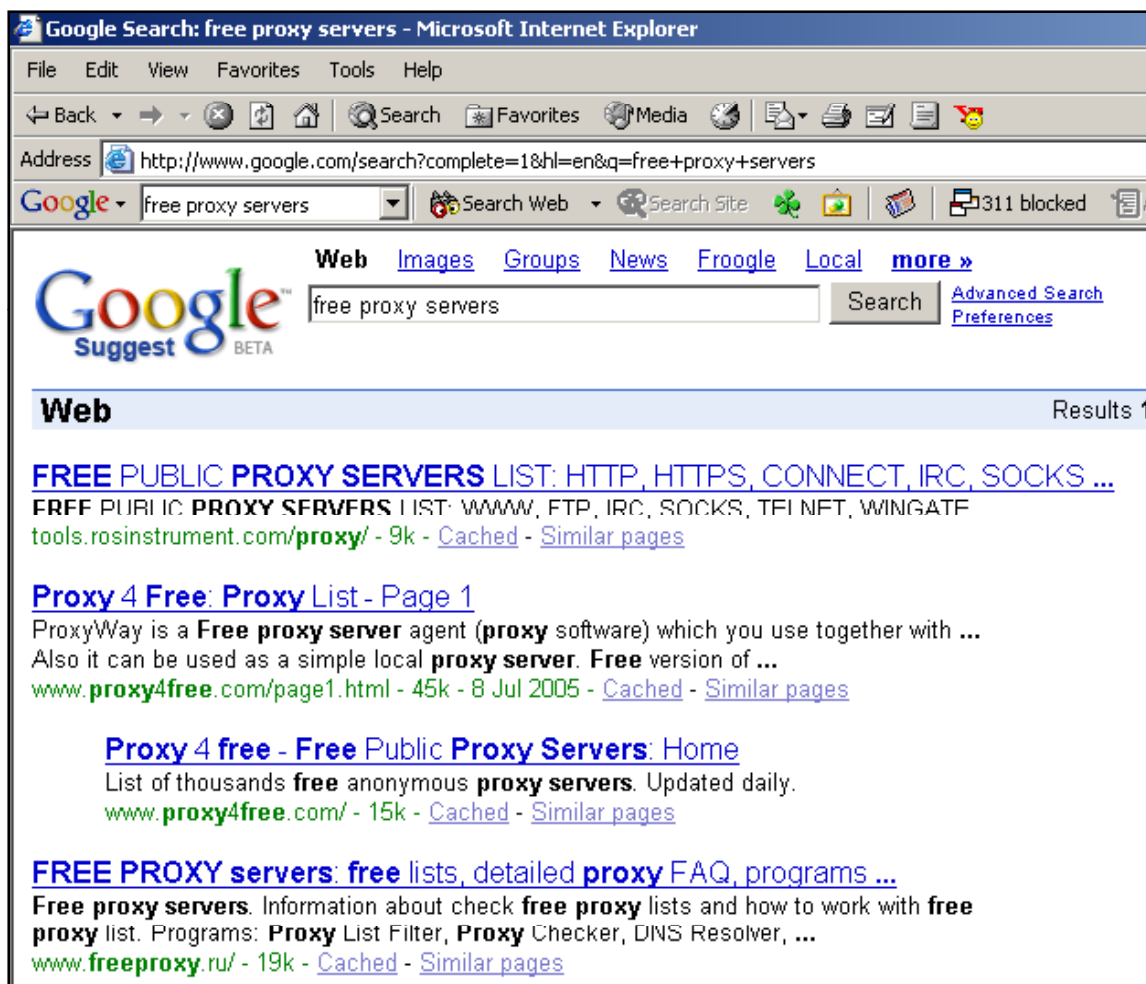
Search for “free proxy servers” in Google

Some of them might be a honeypot to catch hackers red-handed

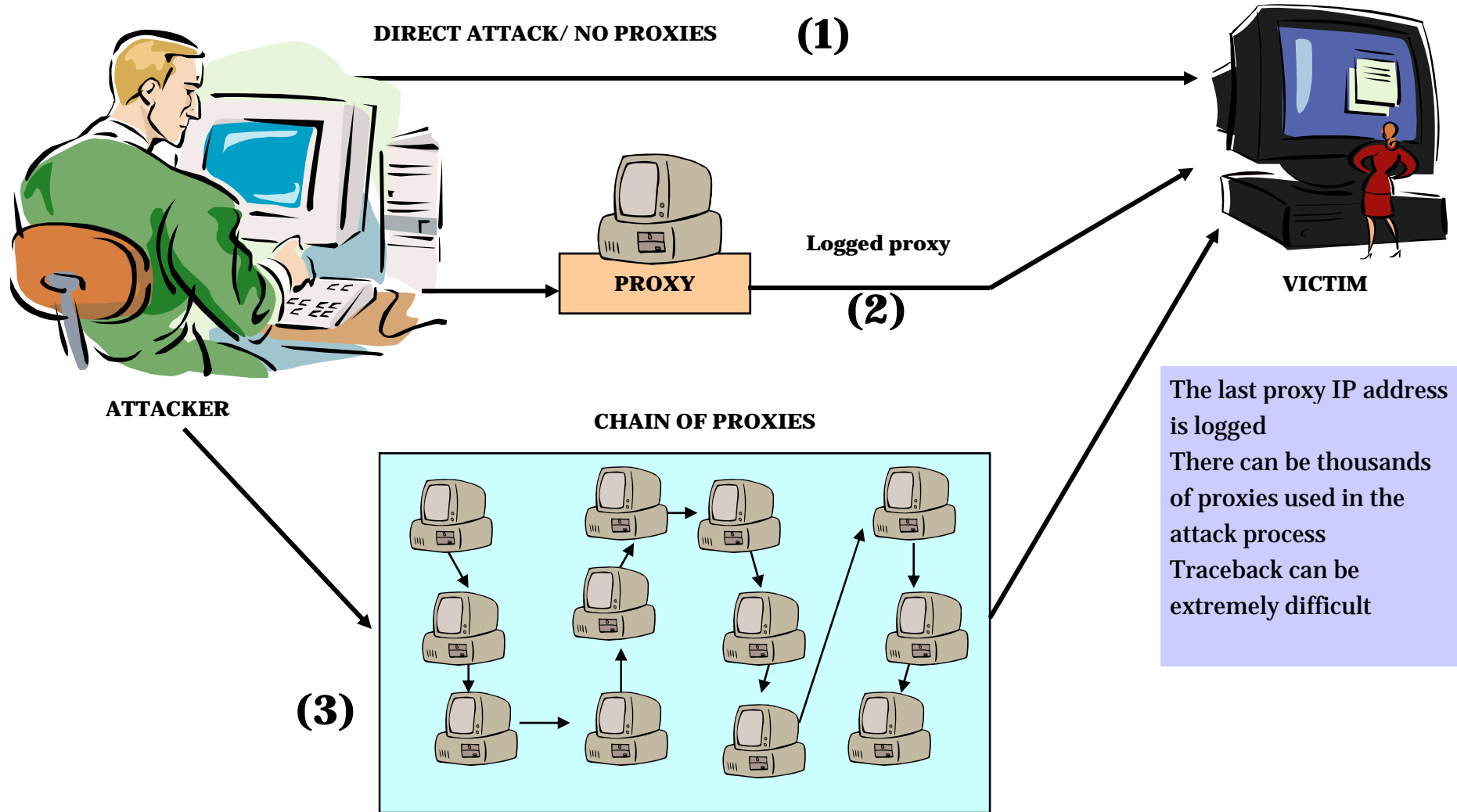
Using proxy servers can mask your trace



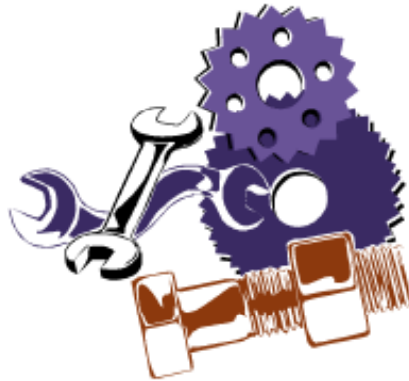
Free Proxy Servers (cont'd)



Use of Proxies for Attack



The last proxy IP address is logged
There can be thousands of proxies used in the attack process
Traceback can be extremely difficult



Tools

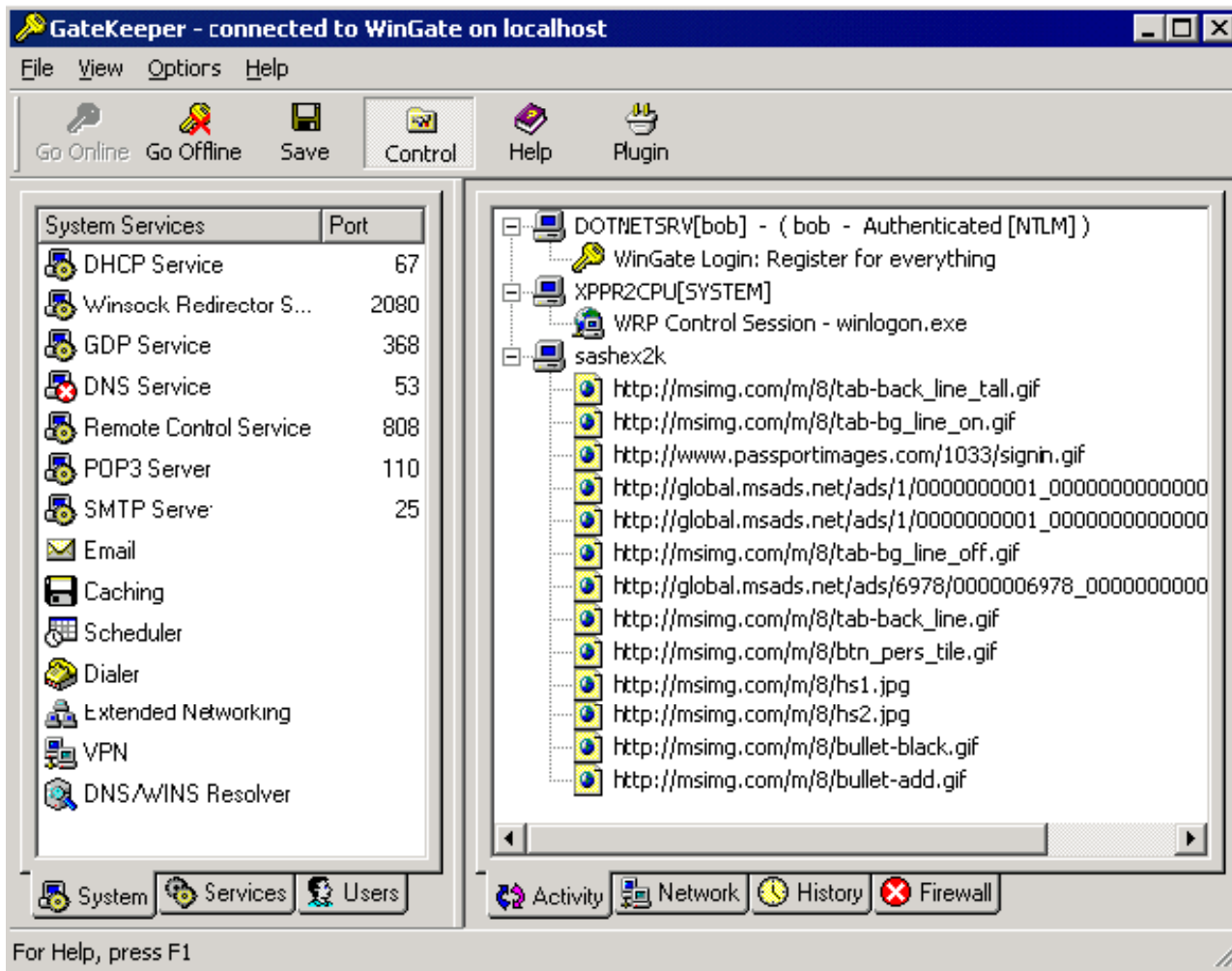
WinGate is a sophisticated integrated Internet gateway and communications server designed to meet the control, security, and communications needs

Features:

- Protect servers from internal or external threats
- Enforce advanced and flexible access-control and acceptable use policies
- Improve network performance and responsiveness with web and DNS caching
- Monitor usage in real time, and maintain per-user and per-service audit logs



WinGate: Screenshot

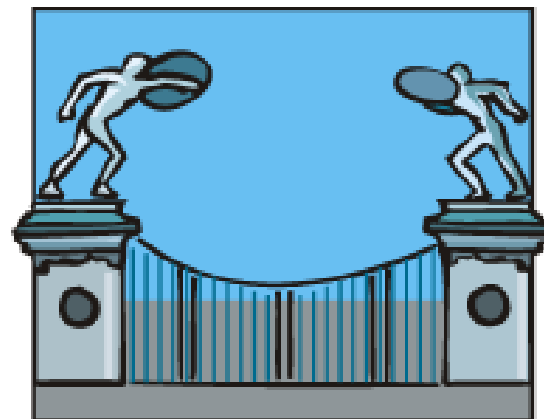


UserGate Proxy Server

UserGate Proxy and Internet security server is a complex and multifunctional software solution that can be used to connect your network to the Internet

Features:

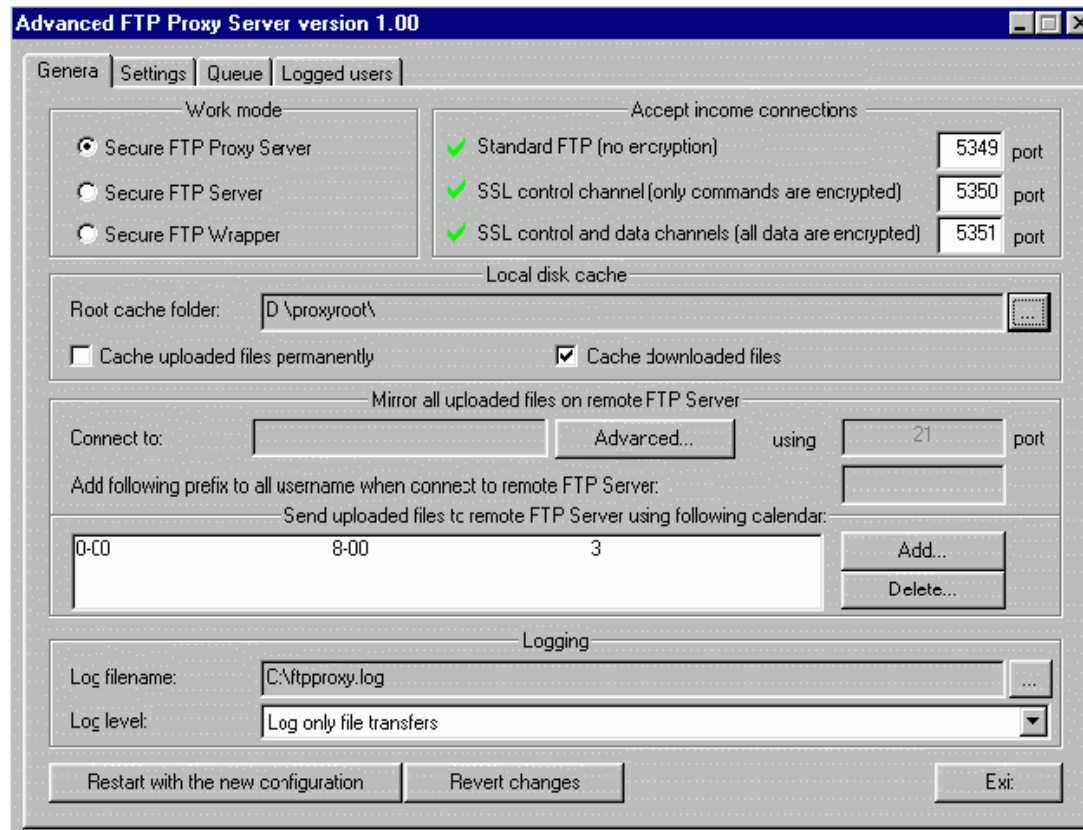
- Internet Connection Sharing (ICS)
- Internet Traffic Analysis
- User-specific access management
- Administration, alerts and statistics
- Internet Security
- Antivirus Gateway Protection
- General Information
- Release history



UserGate Proxy Server: Screenshot

Advanced FTP Proxy Server

Advanced FTP Proxy Server adds encryption and file caching to FTP Server



The Trilent FTP Proxy is an application-level proxy that performs smart inspection of the FTP protocol, which enables it to block many Internet threats

Features:

- Sharing Internet Connection
- Reverse Proxying
- Unattended Operation
- Standards Compliance
- Security



SafeSquid delivers the essential goals of a Content Filtering Internet Proxy - Total Access Control & Total Content Control

Features:

- Profiled Internet Access
- User Authentication
- Application QoS and Bandwidth Limits
- Caching and Pre-fetching
- Connectivity for Third-party software & services
- Enterprise Wide Management
- Re-Programmable Content Filtering
- Redundant level Content Security
- Customisable Log Reports
- Programmable Custom Templates

SafeSquid: Screenshot



AllegroSurf is a web accelerating, content filtering, proxy server

It allows users to share a single Internet connection with multiple computers on a LAN, while protecting users from unwanted content and increasing overall Internet speed

It runs in the background to share Internet connection with the rest of the network

AllegroSurf: Screenshot

The screenshot shows the AllegroSurf Voyager application window. The title bar reads "AllegroSurf Voyager - 192.168.0.20". The interface includes a menu bar (File, Edit, View, Help), a toolbar with various icons, and a left-hand navigation tree with categories like Monitor, Activity, Performance, Users, Proxy Servers, Filtering, Prefetch, Scheduler, Storage, and Administration. The main area displays a table of network activity.

Command	Type	Host	Requested By	% Complete
UDP Associate	SOCKS5	0.0.0.0:4612	192.168.0.5	Unknown
Connecting	SOCKS	Unknown	192.168.0.6	Unknown
Mapping	UDP Mapping	icq.mirabilis.com:4000	192.168.0.6:4607	Unknown
Mapping	UDP Mapping	icq.mirabilis.com:4000	192.168.0.8:1229	Unknown
CONNECT	SSL		192.168.0.6	Unknown
CONNECT	SSL		192.168.0.6	Unknown
GET	http	www.ezbid.com	192.168.0.6	Unknown
GET	http	www.ezbid.com	192.168.0.6	Unknown

For Help, press F1. Shift+F1 for help about the selected item.

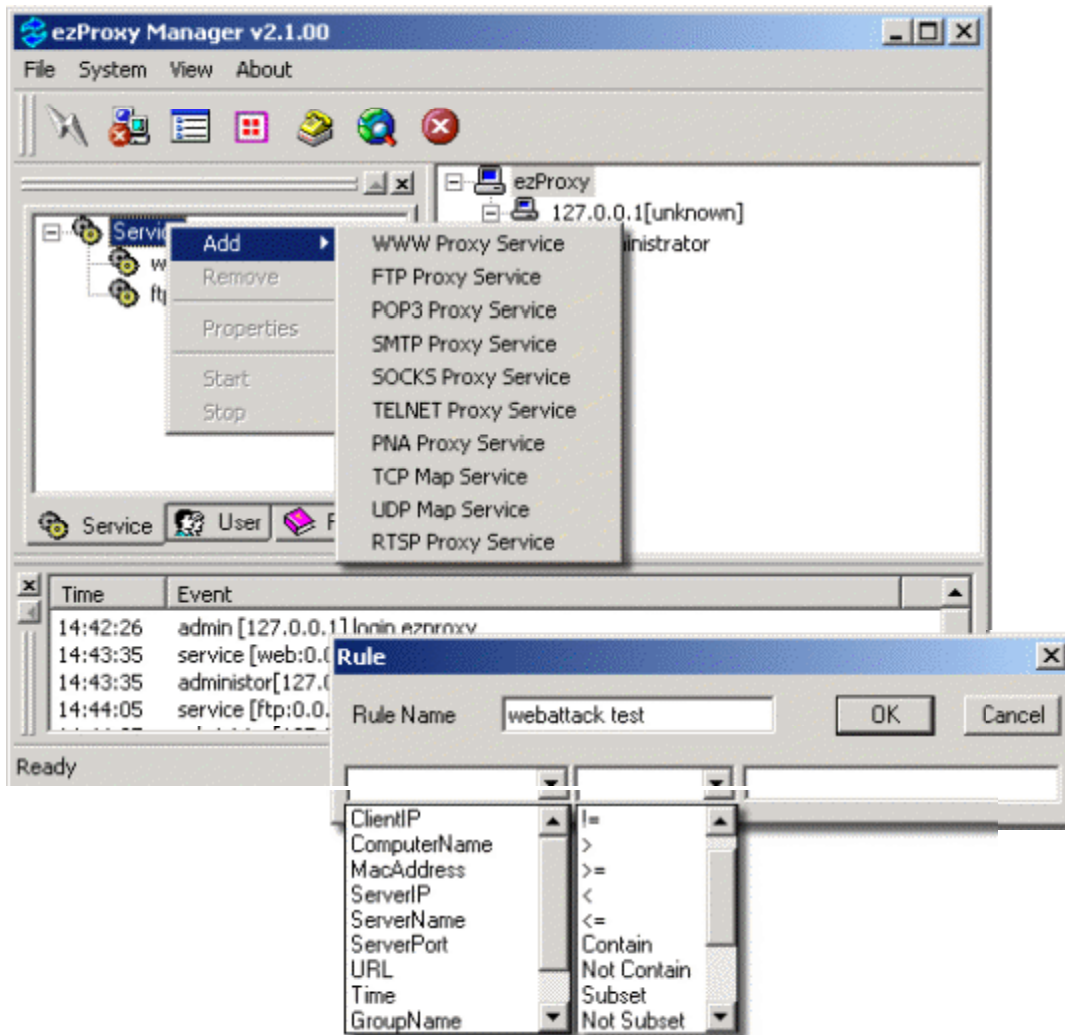
ezProxy allows an entire network to share a single Internet account simultaneously

It protects valuable information on the network with the integrated proxy server/firewall

Users can specify rules for all users or define custom rules and restrictions for individual users

Rules can be saved as policies and applied as needed

ezProxy: Screenshot



Proxy Workbench

Proxy Workbench is a small proxy server which sits inside the network and monitors connection

Configuration:

Install Proxy Workbench

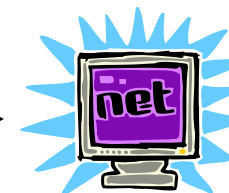
Configure the clients to use this proxy IP to connect to port 8080



User



Proxy Server



Internet

Proxy Workbench: Screenshot

The screenshot displays the Proxy Workbench application window. The interface includes a menu bar (File, View, Tools, Help), a toolbar with various icons, and a main monitoring area. On the left, a tree view shows 'Monitoring: windows (192.168.131.68)' with sub-items for SMTP, POP3, HTTP Proxy, and HTTPS Proxy. The main area shows a list of events, with the selected event being '425 bytes of data has been received from the remote client'. Below this, a diagram illustrates the data flow between a client (127.0.0.1:1082) and a server (127.0.0.1:8080). The diagram shows two instances of data being sent to the remote client (473 bytes and 445 bytes) and two instances of data being received from the remote server (473 bytes and 445 bytes). At the bottom, a 'Real time data' window displays a hex dump of the received data.

Monitoring: windows (192.168.131.68)

Details for 425 bytes of data has been received from the remote client Event 2 of 13 Page 1 of 1

127.0.0.1:8080 sent to the remote server 13:30:36.855

(127.0.0.1:1082) 473 bytes of data has been sent to the remote client. 13:30:37.346 127.0.0.1:8080 473 bytes of data has been received from the remote server. 13:30:37.346

(127.0.0.1:1082) 445 bytes of data has been received from the remote client 127.0.0.1:8080 445 bytes of data has been sent to the remote server 13:30:37.466

Real time data for 425 bytes of data has been received from the remote client.

```

001056 =i.ÁV]...!..Q1%Á 3d ee 00 e5 56 86 1a e8 c0 21 07 cd 51
001072 Z.|W%ëeo{!z!..! 5a e8 a6 57 bd eb 65 6f 7b 9f 7a 85 12
001088 M.I±Eo/@..mG+*.. 4d 10 49 b1 ca 63 2f 40 12 e0 6d 47 2b
001104 ..IH!...o.{'.'X 0a 01 49 48 8b bc 1b b8 03 a2 dc 7b 60
001120 Á.6Á.Vp.®.8e-+. ( c1 0b 36 c2 0a 56 70 02 ae 12 38 65 2d
001136 !ú! >...t..16..!O 85 fb 8f 20 3e e7 13 74 10 1d 6c 36 00
001152 tÁ#&q|M|.].@I-8. 74 c1 23 26 71 89 4d 7c 1a 5d ac 40 49
001168 ...!hN.~!³E/... 1a 92 d8 83 08 68 4e c4 7e 21 aa 45 2f
001184 yx.®R!}üo «.b.3 79 78 0c 6f 52 ee 89 7d fc 63 20 ab f7
001200 Á.6..!..%o.!.!..q c1 02 36 e0 e2 b6 84 18 bd a2 ff 21 80
    
```

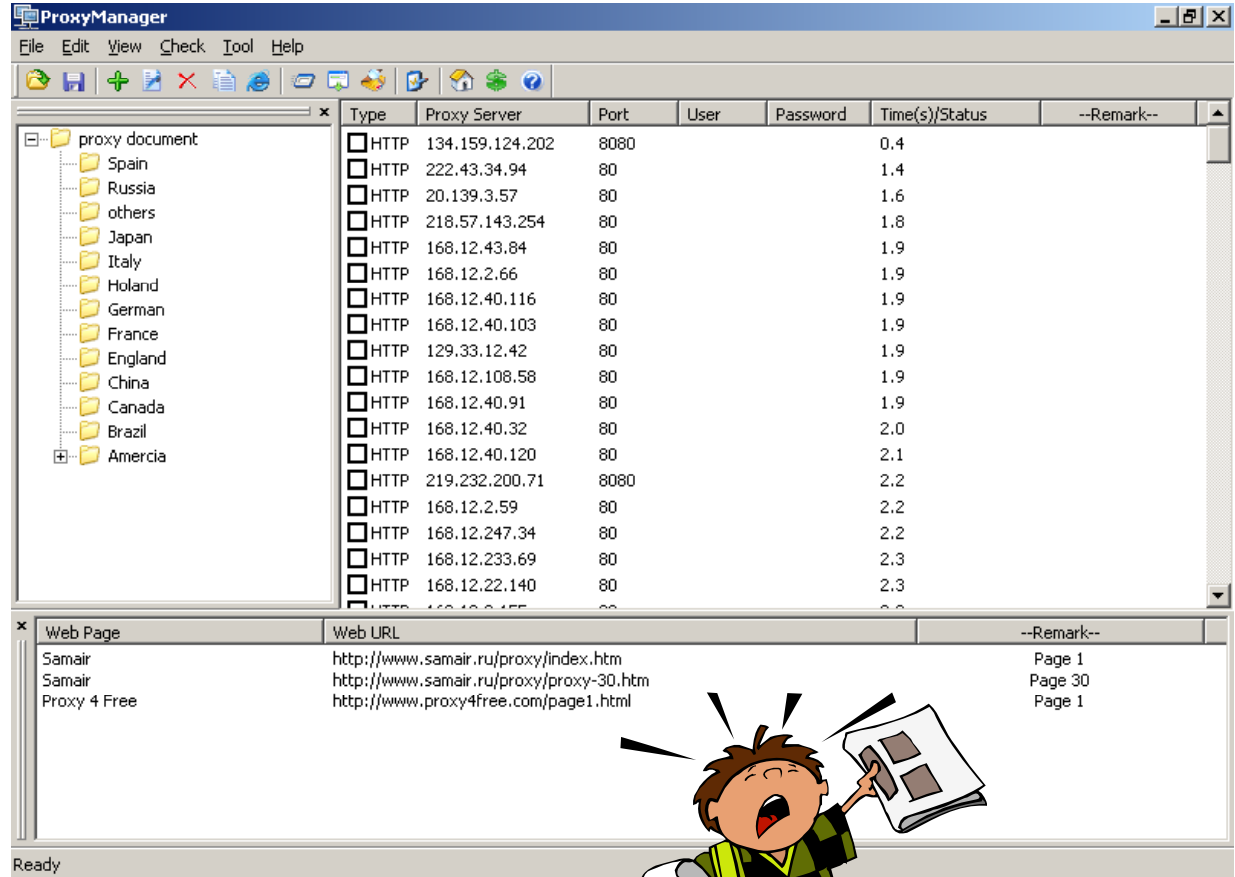
Memory: 161 KBytes Sockets: 6 Events: 204 Terminate: Off Refuse: Off Throttle: Off Dangle: Off Logging: Off 1:34 PM

ProxyManager Tool

ProxyManager connects to the Internet and downloads lists of proxy servers from various websites

You will have thousands of proxy server IP addresses within minutes

Saves time instead of manually visiting individual web sites looking for free proxy servers



Super Proxy Helper Tool

Super Proxy Helper will help you to:

- Find anonymous, free, or fastest proxy
- Check proxy status response time within a country
- Determine Proxy type (Transparent, Anonymous, or High anonymity)
- Import export proxy
- Download proxy lists from the web



Super Proxy Helper Tool: Screenshot

Connect State

IP: 202.156.6.62 Country: SINGAPORE

True IP: 218.212.254.20 Country: SINGAPORE

Connection: Direct Get My IP

Proxy Server

Use proxy

Proxy Server: 127.0.0.1 Port: 8080

Proxy Country: Unknown Check Apply

Use	Server	Port	Protocol	Status	Time	Type	Country
<input type="checkbox"/>	12.217.30.133	7212	HTTP	Unknown	0	Unknown	UNITED STATES
<input type="checkbox"/>	12.227.190.222	2301	HTTP	Unknown	0	Unknown	UNITED STATES
<input type="checkbox"/>	24.24.102.186	80	HTTP	Unknown	0	Unknown	UNITED STATES
<input type="checkbox"/>	24.75.229.42	3128	HTTP	Unknown	0	Unknown	UNITED STATES
<input type="checkbox"/>	24.78.2.244	8000	HTTP	Unknown	0	Unknown	CANADA
<input type="checkbox"/>	58.51.89.8	8080	HTTP	Unknown	0	Unknown	AUSTRALIA
<input type="checkbox"/>	58.73.194.167	50050	HTTP	Unknown	0	Unknown	AUSTRALIA
<input type="checkbox"/>	58.230.33.153	50050	HTTP	Unknown	0	Unknown	AUSTRALIA
<input type="checkbox"/>	58.236.1.248	50050	HTTP	Unknown	0	Unknown	AUSTRALIA
<input type="checkbox"/>	58.239.165.48	50050	HTTP	Unknown	0	Unknown	AUSTRALIA
<input type="checkbox"/>	61.0.62.4	8080	HTTP	Unknown	0	Unknown	INDIA
<input type="checkbox"/>	61.36.59.144	50050	HTTP	Free	1078	Unknown	REPUBLIC OF KOREA
<input type="checkbox"/>	61.43.80.13	50050	HTTP	Unknown	0	Unknown	REPUBLIC OF KOREA
<input type="checkbox"/>	61.82.56.224	50050	HTTP	Unknown	0	Unknown	REPUBLIC OF KOREA
<input type="checkbox"/>	61.83.77.198	50050	HTTP	Unknown	0	Unknown	REPUBLIC OF KOREA
<input type="checkbox"/>	61.104.213.145	50050	HTTP	Unknown	0	Unknown	REPUBLIC OF KOREA
<input type="checkbox"/>	61.128.100.116	8080	HTTP	Unknown	0	Unknown	CHINA

Toolbar: Auto-Config, Download Proxys, Check, Check All, Stop, New, Modify, Delete, Delete All, Filtrate, Import, Export, Config, Order Online, Register, About

What if your Firewall is blocking you from various proxy servers and anonymizers?

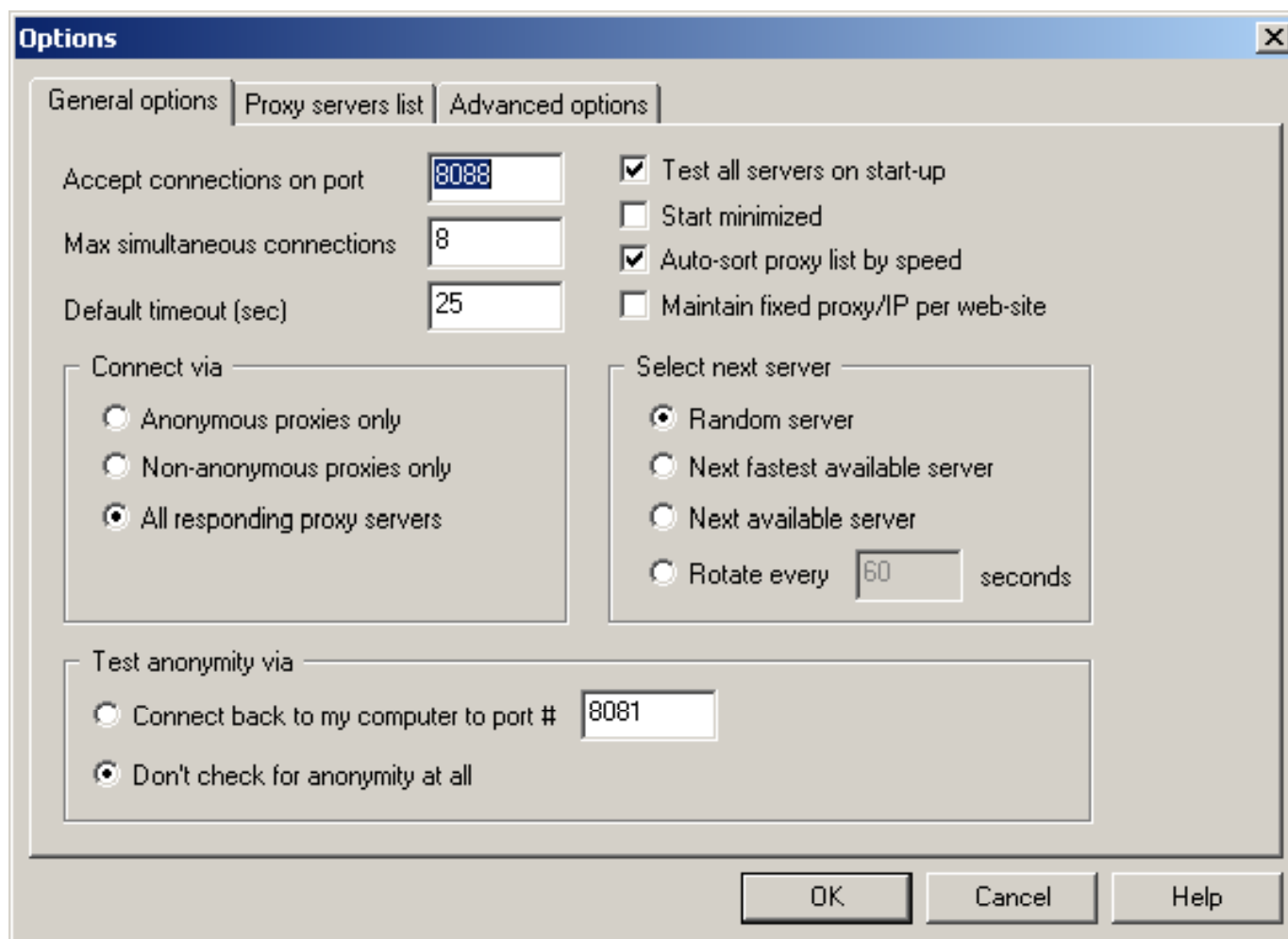
MultiProxy uses different proxies every time you visit the Internet

Adds thousands of proxies to the list and your Firewall does not see a pattern in your traffic

This tool can make it difficult to trace



MultiProxy: Screenshot



How Does MultiProxy Work



Attacker

MultiProxy running
at 127.0.0.1:8088

Every traffic is sent to random proxy in the list

List of Proxy Servers

164.58.28.250:80
194.muja.pitt.washdctt.dsl.att.net:80
web.khi.is:80
customer-148-223-48-114.uninet.net.mx:80
163.24.133.117:80
paubrasil.mat.unb.br:8080
164.58.18.25:80
bpubl014.hgo.se:3128
bpubl007.hgo.se:3128
www.reprokopia.se:8000
193.188.95.146:8080
193.220.32.246:80
AStrasbourg-201-2-1-26.abo.wanadoo.fr:80
gennet.gennet.ee:80
pandora.teimes.gr:8080
mail.theweb.co.uk:8000
mail.theweb.co.uk:8888
194.6.1.219:80
194.79.113.83:8080
ntbnp.naltec.co.il:8080
195.103.8.10:8080
pools1-31.adsl.nordnet.fr:80
pools1-98.adsl.nordnet.fr:80
195.167.64.193:80
server.sztmargitgimi.sulinet.hu:80
los.micros.com.pl:80
195.47.14.193:80
mail.voltex.co.za:8080
196.23.147.34:80
196.40.43.34:80
lvswb.lasvegasstock.com:8000
musalemnt.notariamusalem.cl:80
ip-36-018.guate.net.gt:80
200.135.246.2:80
ntserver1.comnt.com.br:80
200-204-182-137.terra.com.br:80



Target

Internet



TOR Proxy Chaining Software

Tor is a network of virtual tunnels connected together and works like a big chained proxy

It masks the identity of the originating computer from the Internet

Tor uses random set of servers every time a user visits a site

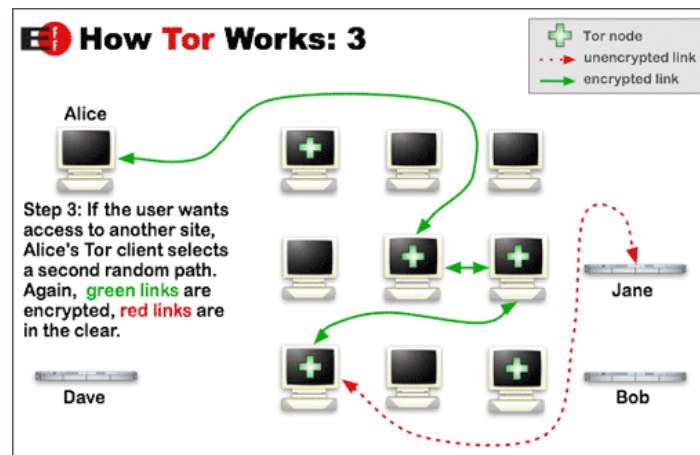
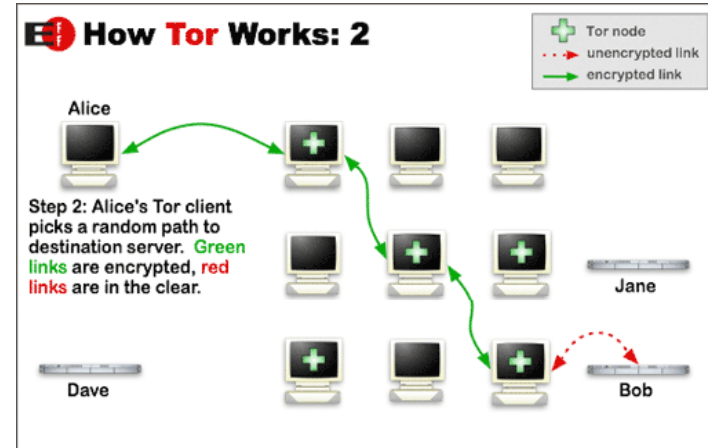
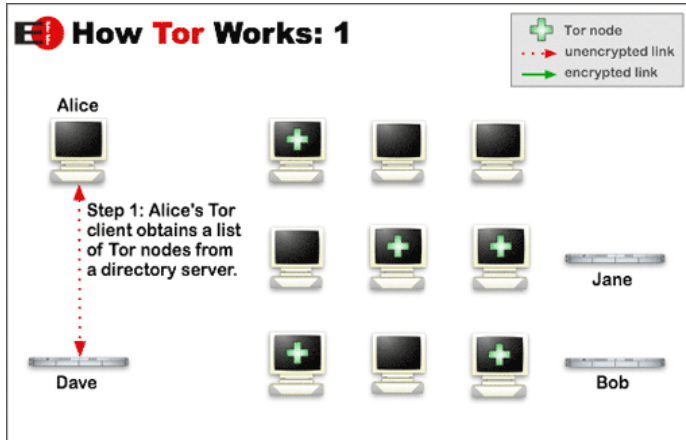
A branch of the U.S. Navy uses Tor for open source intelligence gathering, and one of its teams used Tor while being deployed in the Middle East

Law enforcement agencies use Tor for visiting or surveillance of web sites without leaving government IP addresses in their web logs, and for security during sting operations

Visit <http://tor.eff.com>



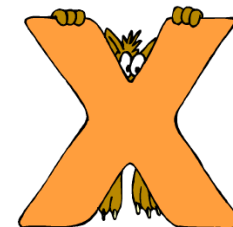
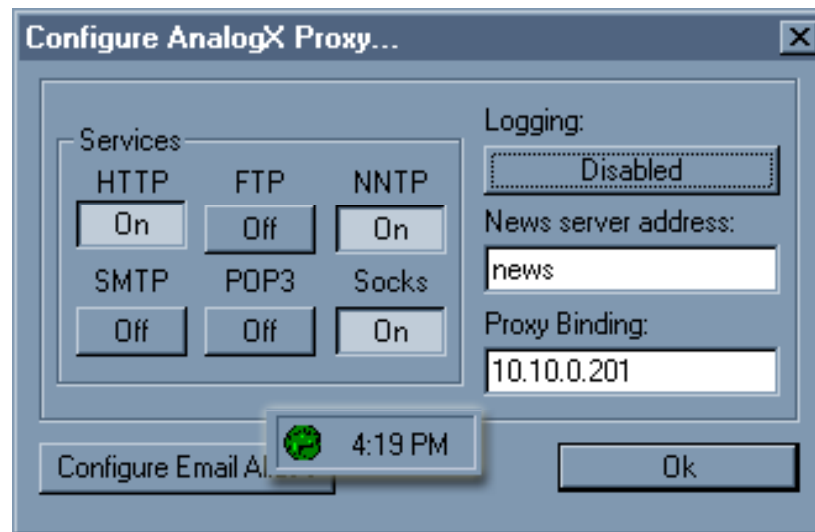
TOR Proxy Chaining Software



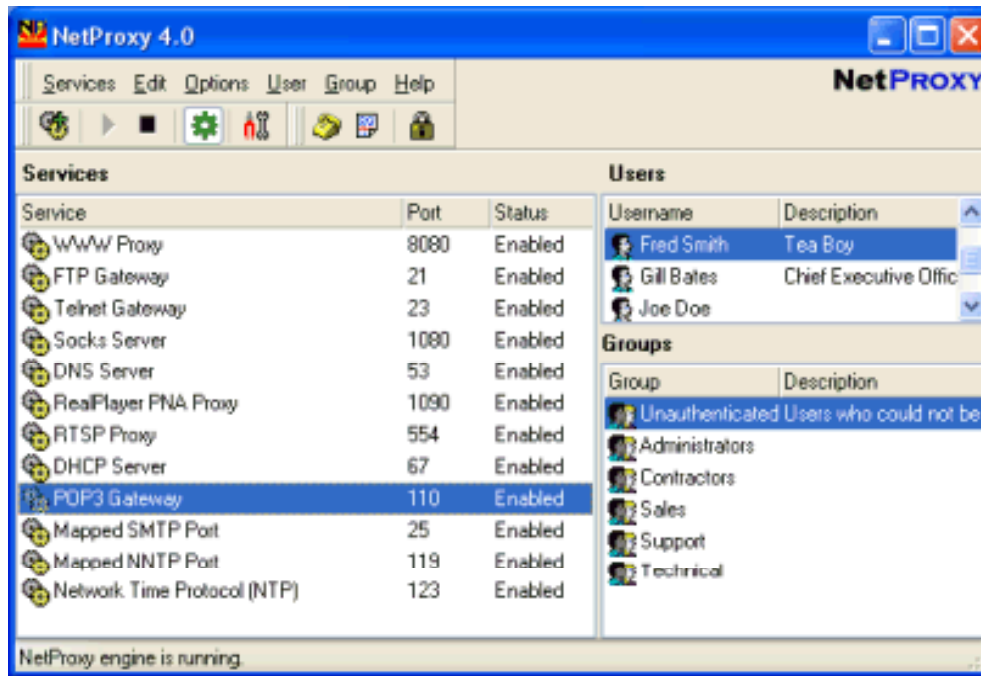
AnalogX Proxy

AnalogX Proxy is a small and simple server that allows any other machine on your local network to route it's requests through a central machine

Supports HTTP (web), HTTPS (secure web), POP3 (receive mail), SMTP (send mail), NNTP (newsgroups), FTP (file transfer), and Socks4/4a and partial Socks5 (no UDP) protocols



NetProxy is a secure, reliable, and highly cost-effective method of providing simultaneous Internet access to multiple network users with only one Internet connection of almost any type

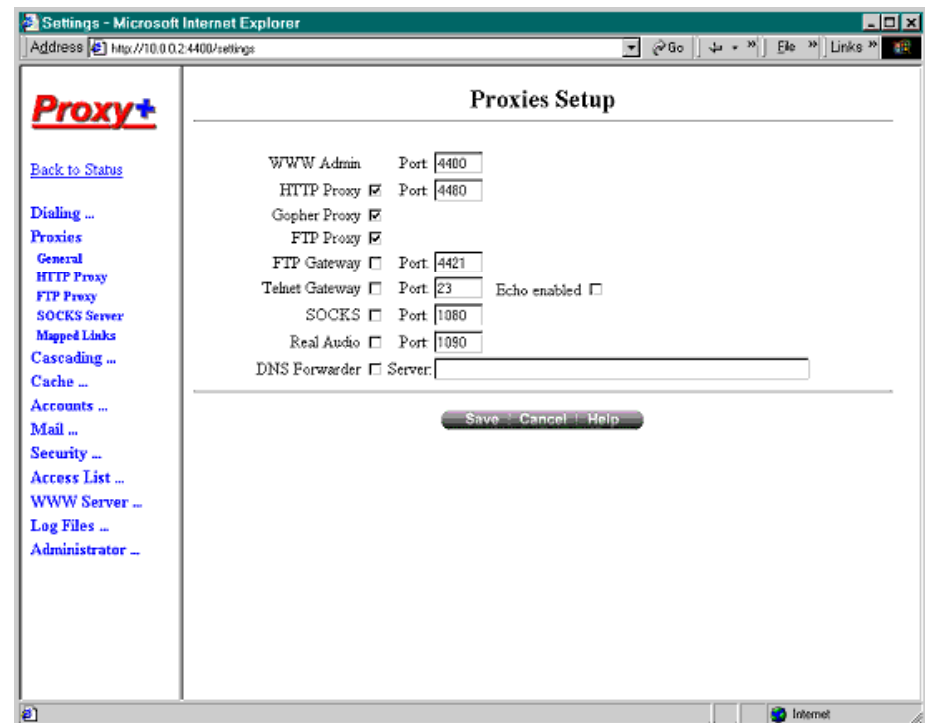




Proxy+ works as firewall proxy server and mail server

Features:

- Separates the LAN from the Internet to protect from attacks
- Insecure interfaces (connected to the internet) are detected automatically
- Cache increases speed of data retrieval and enables the use of data even if a connection isn't established
- Sends and receives mail for many Internet mail boxes at one time using the POP3 protocol
- Full SMTP mail server for one or more domains
- Option for leaving messages on POP3 server



ProxySwitcher Lite

ProxySwitcher Lite is a handy tool to quickly switch between different proxy servers while surfing the Internet

Features:

Change proxy settings on the fly

Automatic proxy server switching for anonymous surfing

Works with Internet Explorer, Firefox, Opera, and others

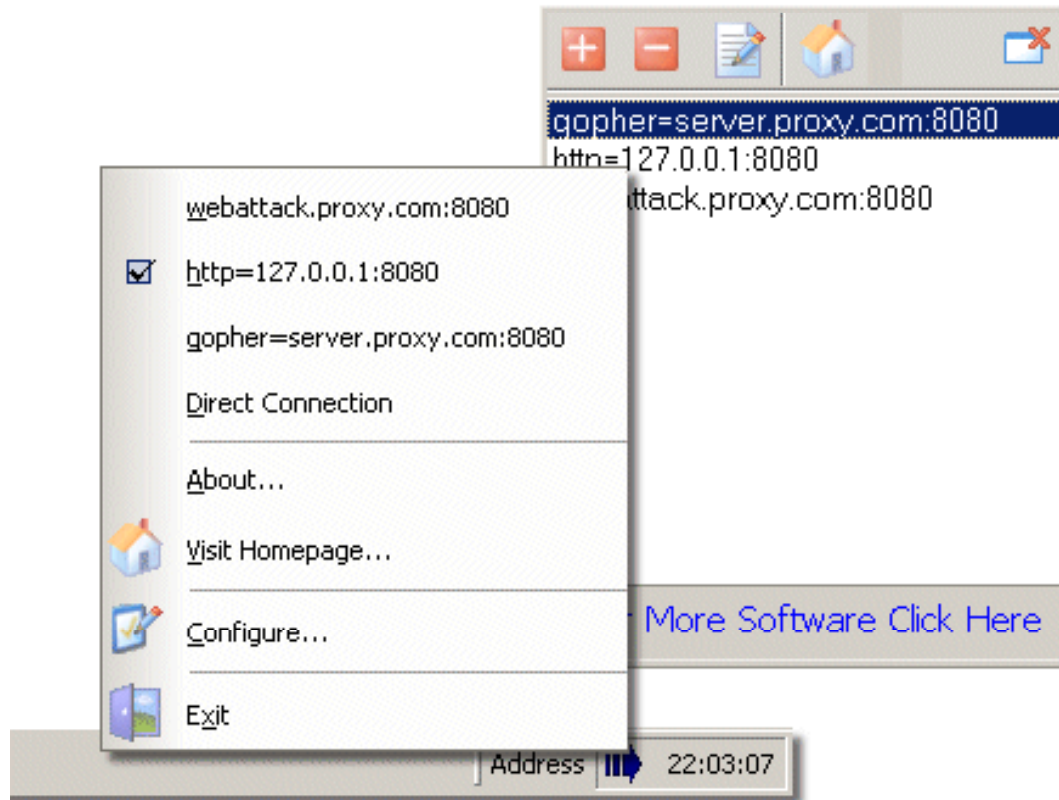
Flexible proxy list management

Proxy server availability testing

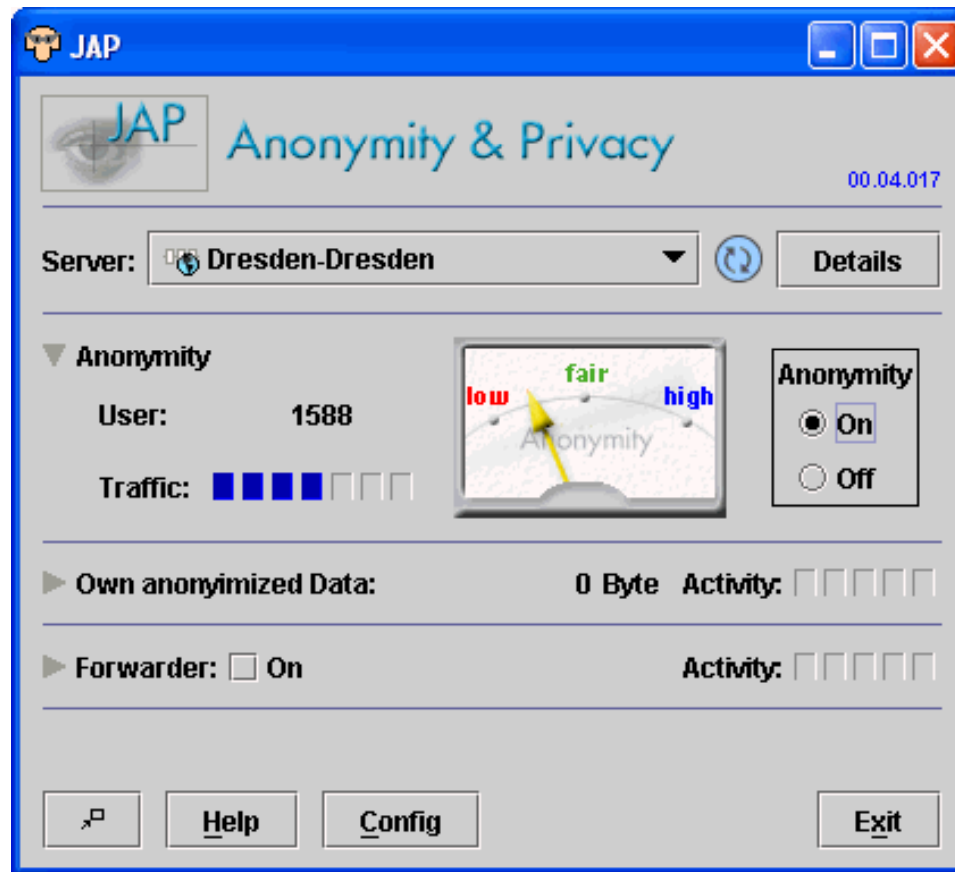
Anonymous proxy server list download



ProxySwitcher Lite: Screenshot



JAP enables anonymous web surfing with any browser through the use of integrated proxy services that hide your real IP address



Proxomitron is a flexible HTTP web filtering proxy that enables to filter web content in any browser

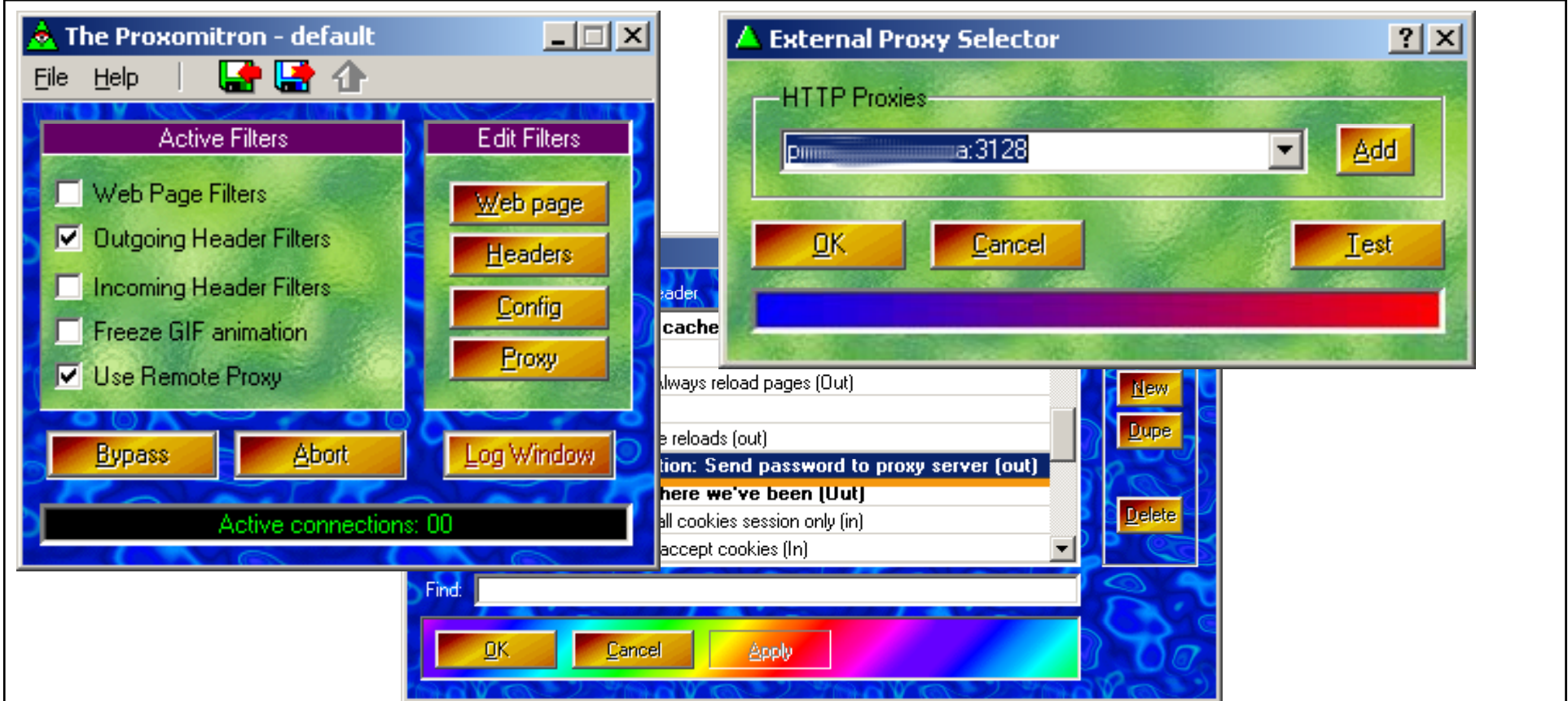
This program runs as a local proxy server and needs to configure browser to use a local host at port 8080 in order to activate filtering

Proxomitron allows you to remove and replace ad banners, Java scripts, off-site images, Flash animations, background images, frames, and many other page elements

HTTP headers can be added, deleted, or changed

Proxomitron filters can be customized and edited as per the requirement

Proxomitron: Screenshot



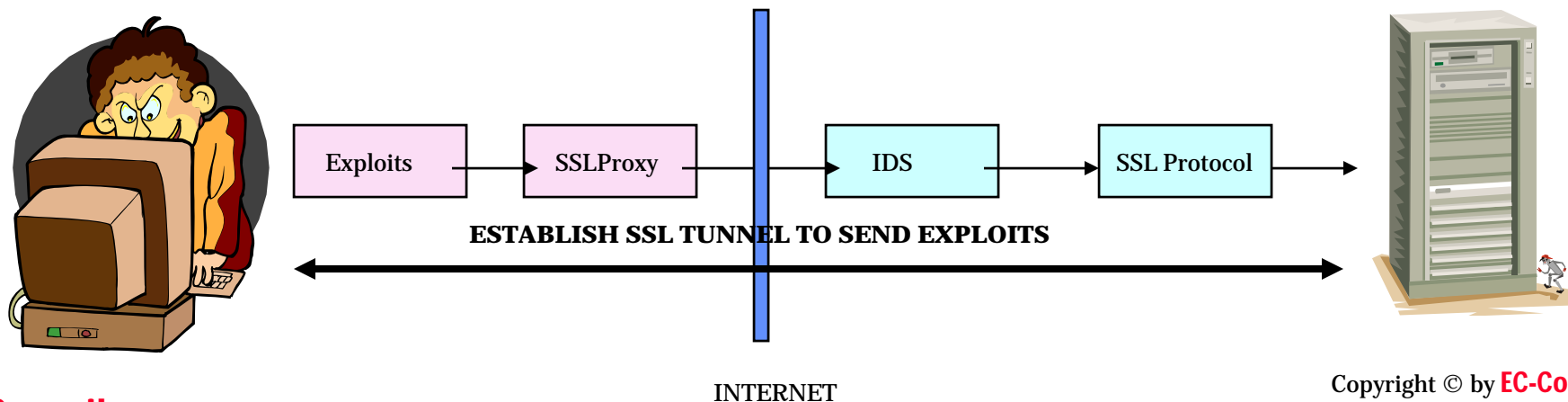
SSL Proxy Tool

SSLproxy is a transparent proxy that can translate between encrypted and unencrypted data transport on socket connections

It also has a non-transparent mode for automatic encryption-detection on netbios

When should I use SSLProxy?

- For example, you want to launch an attack on a remote server which has installed SSL
- The exploits you send will be caught by the IDS and you want to mask this detection
- Run SSLproxy on your machine and tunnel all the exploits through this proxy, which will use SSL to transmit the packets to the remote server blinding the IDS



How to Run SSL Proxy

Window 1: Client – Hacker Machine Run:

- `sslproxy -L127.0.0.1 -l55 -R <some remote IP> -r 443 -c dummycert.pem -p ssl2`

Window 2: Client - Connect to 127.0.0.1 port 55 and send your exploits

- Example: `telnet 127.0.0.1 55`
- Then type `GET /`

```
C:\WINDOWS\System32\cmd.exe - sslproxy -L127.0.0.1 -l55 -R 64.90.176.10 -r 443 -c dummycert.pe...
^C
J:\Ethical Hacking and Countermeasures v5\Module 03 - Scanning\sslproxy\sslproxy
_native_windows\Release>sslproxy -L127.0.0.1 -l55 -R 64.90.176.10 -r 443 -c dumm
ycert.pem -p ssl2
proxy ready, listening for connections
connection on fd=1920
SSL: No verify locations, trying default
SSL: Cert error: unknown error 20 in /C=US/O=Equifax Secure Inc./CN=Equifax Secu
re Global eBusiness CA-1
SSL: negotiated cipher: DES-CBC3-MD5
client: broken pipe (read)
jumping catch
```

```
C:\Documents and Settings\Haja>telnet localhost 55
```

Proxy servers act as a connecting link between internal users and external host

Proxy targeted to World Wide web is called Web Proxy

Transparent proxy works on the port 80

Caching proxies stores the copies of recently used and frequently used resources, reducing the upstream bandwidth usage and cost

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**“Customers aren’t impressed by our web site anymore.
We need to put the ‘gee’ back in ‘technologiee!’”**

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www.glasbergen.com



**“Install a patch for the update of the new version.
If that doesn’t work, install the new version of
the update for the patch. If all else fails, install
a patch for the new version of the update.”**